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considers the enormous amount of material from this region, nearly 11,000 specimens, which has been in Dr. Calvert's hands. As we should expect, these new species occur most frequently among the smaller Zygoptera, the genus *Argia* containing the surprisingly large number 22 (as against 26 species previously known). The presence of such an array of the smaller, more inconspicuous species is due not only to the very careful analysis of the material, but it is in a good measure traceable to the recent collecting trips of a number of experienced odonatologists (besides Calvert himself) into this region. The collections and notes made by these gentlemen, fully accredited in the work, have added largely in many ways to the value of the paper.

This work of Calvert's stands alone in American odonatology. The only paper of sufficient scope to be in any way comparable is Hagen's Synopsis of N. A. Neuroptera (1861) and that was pioneer work. But for that matter there are few works in the whole field of systematic entomology which can be compared with this when we consider the amount of material studied as well as the thoroughness, care and painstaking effort with which all the details of the material have been searched and weighed. It is a model of modern systematic entomology and the reviewer heartily recommends to all students of systematics a careful consideration of the methods employed by Calvert in the pursuit of this work.* The elimination of "snap" judgment, and even to a great degree, of the personal equation, by long series of measurements in the study of genera, species and variations, may not appeal strongly to some entomologists, but it is scientific and assures a safe basis for permanence of results.

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PROCEEDINGS OF THE NEW YORK ENTOMOLOGICAL SOCIETY.

MEETING OF OCTOBER 6, 1908.

Held at the American Museum of Natural History, President C. W. Leng presiding, with eleven members and three visitors present.

The librarian, Mr. Schaeffer, reported the receipt of the following exchanges since May, 1908.

Bull. 46 and 48, University of Montana.

Mittheil. a. d. Zool. Mus. in Berlin, III, No. 4; IV, No. 1.

The Polymorphism of Ants, by W. M. Wheeler.

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* See "Science," Nov. 13, 1908, for Calvert's own account of his methods.

Honey Ants with a Revision of the American Myrmecocysti, by W. M. Wheeler.

Vestigial Instincts in Insects and Other Animals, by W. M. Wheeler.

The Ants of Texas, New Mexico and Arizona, by W. M. Wheeler.

The Ants of Casco Bay, Maine, with Observations on Two Races of *Formica sanguinea* Latr., by W. M. Wheeler.

Berliner Ent. Zeitschr., LII, Nos. 3 and 4; LIII, No. 1.

Zeitschr. f. Wiss. Ins. Biol., III, Nos. 1–7; IV, Nos. 4–7.

Insect World, XII, Nos. 4–6.

Canadian Ent., XL, Nos. 6–10.

Wiener Ent. Zeitg., XXVII, Nos. 6–8.

Deutsche Ent. Zeitschr., 1908, Nos. 3 and 4.

Horæ Soc. Ross. XXXVIII, No. 3.

Proc. Am. Acad. Arts and Sci., XLIII, Nos. 18–22.

Verhandl. d. K. K. Zool. Bot. Gesel. Wien, LVIII, Nos. 4 and 5.

Proc. Amer. Philos. Soc., XLVII, No. 188.

Bull. de la Soc. Ent. d'Egypt, 1908, No. 1.

Bull. Buffalo Soc. Nat. Hist., IX, No. 1.

Chicago Acad. Sci. Special Publ., No. 2, 1908.

Bull. de Lab. de Zool. Gen. Agraria, Vol. II.

Revue Russe d'Entomologie, VII, Nos. 1, 2 and 3.

Bericht über d. Zool. Mus. Berlin, 1908.

Bull. della Soc. Ent. Italiana, XXXVIII, Nos. 3 and 4.

Stett. Ent. Zeitg., LXIX, No. 12.

Brooklyn Inst. Mus. Sci. Bull., I, No. 14.

Mr. Davis proposed as active members of the society: Roy W. Miner, American Museum of Natural History; Charles L. Pollard, New Brighton, N. Y.; Charles E. Sleight, Paterson, N. J.; for Prof. Wheeler Mr. Davis also proposed Dr. Alex. Petrunkewitch, Short Hills, N. J.

On motion of Mr. Schaeffer the by-laws were suspended and the secretary empowered to cast a single ballot for the election of the proposed members.

Mr. Davis spoke of the trip of Alanson Skinner to the Hudson Bay Wilds, and read an account of the expedition from the New York Tribune of Sept. 14. Mr. Skinner brought back with him a number of insects, mostly Coleoptera collected at James Bay, and presented to Mr. Davis. These were exhibited. Among the specimens shown were *Cicindela hyberborea*, *Cicindela 12-guttata*, *Carabus mœander*, *Bembidium carinula*, *Silpha lapponica*, *Hippodamia falcigera*, *Coccinella transverso-guttata*, *Adelocera brevicornis*, *Criocephalus agrestis*, *Neoclytus muricatulus*, *Acmæops proteus*, *Tetropium cinnomopterum*, *Corymbites appressus* and *Adoxus vitus*. Such widely distributed species as *Aphodius fimetarius*, *Monohammus scutellatus* and *Diabrotica 12-punctata* were also represented in the collections.

The president called upon all of those present to give an account of their summer's collecting experience.

Mr. Southwick spoke of his arduous work in fighting insects in Central Park during the past summer.

Dr. Dow spoke concerning the excellency of the collecting at Clairmont, New Hampshire.

Dr. Zabriskie told of his trip through the Great Lakes where his collecting was incidental.

Mr. Barber spoke of his collecting experience in the Adirondack Mountains.

Mr. Harris, Mr. Dickerson, Mr. Schaeffer spoke briefly of their summer's work.

Dr. Younglove, of Elizabeth, N. J., spoke for a few minutes chiefly concerning instinct in insects.

Society adjourned.

MEETING OF OCTOBER 20, 1908.

Held at the American Museum of Natural History, President C. W. Leng in the chair, with fifteen members present.

The minutes of the two preceding meetings were read and approved.

The librarian reported the receipt of the following exchanges :

Deutsche Ent. Zeitg., 1908, No. 6.

Tijdschrift voor Entomologie, 1908, No. 2.

Proc. Amer. Philos. Soc., XLVII, No. 189.

Mr. John W. Angell, 235 West 76th St., was proposed as an active member of the society by Mr. G. W. Angell.

On motion of Dr. Zabriskie the by-laws were suspended and the secretary instructed to cast a single ballot for the election of Mr. Angell.

The president spoke of Professor Smith's fiftieth birthday and announced that at its celebration it was the intention of entomological friends to present a loving cup and requested that all so inclined contribute to raise the necessary funds.

Mr. G. W. Angell moved that the president appoint a committee of one to receive the contributions. Carried. The president appointed Mr. Dow.

On motion of Mr. Schaeffer a hearty vote of thanks was tendered to Mr. Miner for his efforts in securing to the society a suitable meeting room in the Museum building.

Mr. J. R. de la Torre Bueno spoke concerning the life histories of some of the aquatic Hemiptera. He spoke briefly concerning the egg-laying habits and development of the following forms: *Belostoma fluminea*, *Ranatra 4-dentata*, *Microvelia borealis*, *Gerris remiges*, *G. marginatus*, *G. canicularis*, *Tropobates pictus*, *Mesovelia bisignata*, *Hydrometra lineata*. All of these species, with most of their developmental stages, were exhibited.

Rev. J. L. Zabriskie spoke concerning the gall-making dipteron *Eurosta solidaginis* Fitch. He called attention to the definition of "ptilinum" in Williston's "North American Diptera," 3d ed., p. 22, which is as follows: "In the Cyclorrhapha an inflatable organ capable of being thrust out through the frontal suture just above the root of the antennæ, and which is used by the imago in springing off the cap to the puparium when about to extricate itself." Words to the same effect are found in Dr. Smith's "Glossary of Entomology." Professor David Sharp gives a more extended explanation in the Cambridge Natural History, Vol. VI, p. 422. Early in the year 1878 Dr. Zabriskie was rearing some flies of this species from their galls on *Solidago canadensis* L., and had the opportunity of observing several imagines in the act of issuing, each from its own gall. Doubtless, as is usually the case, the larva when full-fed had bored a tunnel from its central cell straight to the outer surface of the gall leaving only the thin cuticle undisturbed to act as a sealed door over its refuge, and then returned to the cell for its long rest in its forming puparium. In the house during the early spring, the imagines began to issue. They had evidently thrown off the round cap of the puparium and had proceeded along the tunnel to the door. This is what was observed in the several instances of the actual escape from the gall; the door was suddenly ruptured and thrust aside, and presently there appeared at the opening a moist, contorted, globular mass which slowly oozed through, followed by the head of the fly, and in a short time, by its entire body. This soft mass was the ptilinum, situated on the front, nearly as large as the head itself, giving the insect a very grotesque appearance. If the fly was undisturbed this was rapidly contracted, and soon entirely disappeared into the head through the suture just above the base of the antennæ. After observing this action, probably in three instances, when the next opportunity occurred, as soon as the fly was free, Dr. Zabriskie dropped it into a cyanide bottle. The killing was quite rapid but not completed before about two thirds of the ptilinum had been retracted into the head. This identical specimen was exhibited, with the ptilinum still further reduced in size by drying during its long stay in the cabinet. The gall of this species, together with two specimens of the fly, were also exhibited.

Mr. Carl Schaeffer exhibited a collection of nearly a hundred species of Alaskan beetles collected and sent to him by his brother. He remarked that only two or three of the species were rare, and spoke concerning the distribution of a few of the species.

Mr. George W. Angell exhibited specimens of *Lachnosterna cribrosa* from Mexico, sent to him by Mr. Schaupp, and a new species of *Tyndaris* from Key West, Florida.

Society adjourned.

MEETING OF NOVEMBER 3, 1908.

Held at the American Museum of Natural History at 8.15 P. M., President C. W. Leng in the chair, with six members and one visitor present. The minutes of the preceding meeting were read and approved.

Mr. Barber proposed as an active member Mr. Christian E. Olsen, 1 Jefferson Ave., Maspeth, L. I. On motion of Mr. Davis the by-laws were suspended and the secretary instructed to cast a single ballot for the election of Mr. Olsen.

Mr. Leng exhibited specimens of *Griburius scutellaris*, *decoratus*, *larvatus*, *montezuma* and *lecontei*. He quoted descriptions by Suffrian and other authors showing that *decoratus* should be added to our lists. In regard to *G. equestris* Oliv. he remarked that no exact locality is given by Olivier or by Suffrian; that no insect from America corresponds to the description, and that it possibly is not from this country.

As Mr. Schaeffer was absent his paper was postponed till the next meeting.

Mr. William T. Davis exhibited a collection of ten specimens of *Xiphidium* from the eastern United States, four of which are to be found in the vicinity of New York city. He called particular attention to a series *X. strictum* collected by himself and Mr. L. B. Woodruff at Arrocar, Staten Island. Most of the females found had wing pads only; a few had long tegmina and wings extending beyond the hind femora; but two or three examples showed wings and tegmina of intermediate length. The ovipositor, which is very long in this species, also shows some variation in amount of curvature.

Mr. H. G. Barber exhibited a collection of Hemiptera taken during the past summer in the vicinity of Cascade Lakes, Adirondack Mountains. He remarked that none of the species had been collected at any great altitude, and for the most part were not unlike what might be collected about New York city. Most of them were collected by sweeping.

Mr. Dow spoke of capturing a number of specimens of *Malachius æneus* at Claremont, N. H., on May 30 resting on *Spiræa*, and other specimens were taken during the latter part of June on other plants.

MEETING OF NOVEMBER 17, 1908.

Held at the American Museum of Natural History, President C. W. Leng in the chair, with sixteen members and one visitor present. The minutes of the preceding meeting were read and approved.

Mr. Dow reported on the dinner to be given to Professor J. B. Smith, Saturday, the twenty-first inst.

Mr. Matausch exhibited a new color variety of *Smilia camelus* from the Catskill Mountains, and read a description of the variety.

Mr. Schaeffer exhibited and spoke on some new Rhynchophora, the descriptions of which were prepared for the December number of the JOURNAL. He also showed several new species of Coleoptera from Nogales, Arizona, among which were 2 *Chauliognathus*, 2 *Discoderus*, 1 *Chrysobothrus*, 1 *Onthophagus*, 1 *Hydnocera* and 1 *Bruchus*.

Mr. Engelhardt exhibited five species and two nests of stingless bees from Guatemala, concerning which he made the following remarks : "The so-called stingless bees were among the most abundant of insects observed during the past summer in Guatemala. Their nests were found on numerous occasions in hollow trees, about houses and underground, but never in exposed situations. Each colony contained an immense number of individuals. The nests of those above ground, so far as noted, were all built of wax, while those underground were built of clay or earth intermixed with a gummy substance. In the character of construction all were alike, the central breeding combs being encased by a mass of irregular galleries with the round honey pots placed on the outside. The honey though sweet was found to be inferior in flavor to that of the hive bee. The Indians are said to eat it, but the white people prefer that of the hive bee which has been successfully introduced. Some of the bees, especially those that build clay nests under ground, displayed a fierce disposition on being disturbed, attacking, seemingly with preference, eyes, ears and nose of the disturber, and even crawling under the clothing. They acted as if about to sting, curling the abdomen around, and the dull pressure of it could be distinctly felt. But most annoying of all was the bite of their sharp mandibles."

Mr. Beutenmüller exhibited the nest of a stingless bee from Brazil, which had been made by a colony of live bees in the Museum.

Mr. Schaeffer spoke briefly of the honey-making wasps of Brownsville, Texas.

Dr. Pollard mentioned the recent death of Dr. James Fletcher, of the Central Experiment Farm, Ottawa, Ontario.

Society adjourned.

MEETING OF DECEMBER 1, 1908.

Held at the American Museum of Natural History, President C. W. Leng in the chair, with sixteen members present. The minutes of the preceding meeting were read and approved.

Mr. Dow, of the committee that arranged the dinner in honor of the fiftieth birthday of Professor J. B. Smith, reported that the occasion had been most successfully celebrated. The report was accepted and the committee was discharged.

The librarian, Mr. Schaeffer, reported the receipt of the following exchanges :

Mittheil. d. Schweiz. Ent. Gesel., XI, No. 8.

Anales del Museo Nac. de Buenos Aires, IX, Ser. 3, 1908.

Verhandl. d. K. K. Zool. Bot. Gesel. Wien, LVIII, Nos. 6 and 7.

Verhandl. Soc. Imper. d. Naturalistes de Moscow, Nos. 1–3, 1907.

Canadian Ent., XL, No. 11.

Insect World, XII, Nos. 9 and 10.

New Species of Noctuidæ for 1908 — I, Notes on the species of Phæocyma. Notes on the species of Rhynchagrotis, by J. B. Smith.

Trans. Texas Academy of Sciences for 1907.

Proceed. Calif. Acad. Sciences, 4th series, III, pp. 1–40.

Zeitschr. f. Wissenschaft. Insektenbiologie, IV, Nos. 8 and 9.

Proc. Amer. Acad. Arts and Sciences, XLIV, Nos. 1–5.

Mr. Beutenmüller read a paper on the North American species of *Amphibolips* and *Holcaspis* illustrated by pen and ink drawings and blackboard sketches. He stated that the galls and adults of these two genera comprise the largest known species of Cynipidæ, and that their galls are very characteristic. The galls of the genus *Amphibolips* may be divided into three groups as follows : (1) those with a spongy substance internally (*A. confluens*, *longicornis*, *carolinensis*, *spinosa* and *acuminata*) ; (2) those with radiating fibers internally (*A. inanis*, *ilicifoliæ*, *cinerea*, *cœlebs*, *citriformis*, *melanocera*, *cooki* and *tinctoriæ*) ; (3) those with a uniform pithy, compact substance internally (*A. prunus*, *gainesi*, *fuliginosa*, *palmeri* and *trizonata*). The galls of *Holcaspis* may be divided into two groups, (1) those with a more or less free, central, larval cell (*H. globulus*, *omnivora*, *rubens*, *cinerosa*, *divricoria*, *bassetti*, *trucksensis*, *sileri*, *spongiosa*, *ficigera*, *succinipes*, *perniciosa* and *corallinus*) ; (2) those with radiating fibers (*H. centricola*, *maculipennis* and *brevipennata*). He also spoke on the subject of galls in general from the botanical and entomological standpoints, and stated that they are of considerable scientific importance in so far as their morphological structure and origin are concerned. The origin and development of insect galls, more especially on the oak, is a subject which has puzzled many eminent scientists. It was first supposed by various naturalists that the Cynipids deposit simultaneously with the egg a drop of irritating fluid which causes the sap to flow and that the formation of the gall is the result of chemical action. The two important factors, however, at work in connection with gall formation, are the activity of the vegetable sap and the influence of the animal agency. Botanically considered galls cannot arise except when the living insect is in direct contact with the living cells which exist in plants and are specially set apart for their growth and development, and in order fully to understand the formation of gall structure recourse must be had to section cutting as well as minute microscopical investigation. It has been shown that the effect on the vegetable structure of the wound made by egg-laying does not cause the gall, as that heals up and no gall formation begins till the larva is about to escape from the egg. Adler discovered that as the larva grew and fed, the gall increased in size, from which it may be inferred that galls (oak-galls) are the result of the excitatory action of the larva in conjunction with the vitality of the vegetable cells.

In consideration of the great variety of galls and the comparative sameness of larval anatomy, it is difficult to understand what are the factors which produce variation of structure, size and color of galls that occur on the same parts of the different plants or different parts of the same plant.

Mr. Harris exhibited a collection of about 200 specimens of *Cicindela formosa-gonerosa* and made some remarks regarding the possible derivation of the species and its dispersal in the United States and northward. The *formosa* form, which is apparently a development from the older *generosa*, occupies the ground roughly described as lying between the Missouri River and the Rocky Mountains, or westward, specimens in the collection appearing from Idaho, and as far south as Texas. *Generosa* is reported from most of the states north of about 35° latitude. In this section it is abundant in the pine-belt of New Jersey, more sparingly at the western end of Long Island. It is also found in abundance on the Connecticut River flats near Windsor, on high sand hills in Litchfield Co. in the same state, and on similar ground in Saratoga Co., N. Y., on the divide between the Hudson River basin and Lake George, and in the valley of the Bouquet River west of Lake Champlain. Everywhere there is practically no variation in the markings, but a great difference in size and color. In the Dominion of Canada a most interesting development has taken place, described by Mr. Leng as var. *manitoba*. The white markings are much broadened, in extreme cases being nearly confluent. In sharp contrast to this form, specimens from New Jersey were shown in which the middle band is interrupted, and the other markings much abbreviated. Beautiful specimens of intergrades between *generosa* and *formosa* were shown from Kansas and Iowa, illustrating the close relation between the two forms of the species.

Mr. William T. Davis exhibited a living specimen of *Mezium*, which showed rows of stiff bristles on the elytra. These bristles fall off when the insect is dead and roughly handled, and lead to the insect being sometimes described as having smooth elytra. *Mezium* and *Gibbium* both occur in the tower of the New York Produce Exchange. *Mezium* has been found in April and November, and *Gibbium*, which is more common, in March, April, June, July and September.

Mr. Davis also exhibited a living larva of the 17-year cicada of the 1911 brood on Staten Island.

Mr. Engelhardt exhibited two boxes of Coleoptera collected in Guatemala on his recent visit there. He spoke concerning the difficulties under which collecting was carried on, and explained that such material as he gathered was collected rather incidentally.

Society adjourned.

MEETING OF DECEMBER 15, 1908.

Held at the American Museum of Natural History, President C. W. Leng in the chair, with sixteen members present.

Mr. Roberts, delegate to the Council of the New York Academy of Sciences, reported that Professor J. B. Smith had brought up the matter of a proposed lecture by Professor E. B. Poulton, of England, to be given under the auspices of the New York and Brooklyn Entomological Societies, and received the endorsement of the Council.

The president appointed the following committee to nominate officers for the coming year: Messrs. E. B. Southwick, J. L. Zabriskie and E. G. Love.

Rev. J. L. Zabriskie gave an account of his microscopical examination of the wax from nests of stingless bees, *Trigona* sp. from Olas de Moka, Guatemala, and *Melipona fuscipes* Friese, from the Orinoco River, Venezuela, and a comparison of the same with wax produced by other hive bees. He found no microscopical fibrous structure in the wax itself, but considerable foreign matter, such as vegetable fibers, pollen grains, etc., lodged there accidentally or brushed off from the bees' bodies. He exhibited several slides of this material and explained how he had prepared the wax and mounted the specimens for examination and preservation.

Mr. I. Matausch exhibited a number of species of interesting *Membracidæ*, together with some colored drawings of the species, and read a short diagnôsis of some of the species.

Mr. William Beutenmüller exhibited a fine collection of Siberian butterflies which had recently been presented to the Museum. These butterflies, from Sredne Kolymsk, Province Yakutsk, collected during June and July by Dr. J. Strojetzjy, and determined by N. J. Kusnezov, of St. Petersburg, Russia, comprised the following species: *Colias palæno* var. *orientalis*, *hyperborea*, *viluensis*, *melinos*, *Melitæa idunia*, *aurelia*, var., *Argynnis freyi*, *frigga*, *angarensis*, *aphirape* var. *assianus*, *Pieris napi*, *callidice*, *Euchloe orientalis* var. *infumata* (type), *Cœnonympha tiphon* var. *viluensis*, *Lycæna optilete* var. *cyparissus*, *Pamphila palæno*, *Grapta c-album*, *Papilio machaon*, *Parnassius tenedius*, *Erebia discoidalis*, *fasciata* var. *semo*, *dabanensis*, *Triphysa tsckerkii*, *Oneis jutta*, *bore* var. *parsa* form *actæloides*, and form *arethusoides*.

Mr. G. P. Engelhardt exhibited a small collection of Hemiptera collected in Guatemala on his recent visit there and spoke briefly concerning some of the species.

Mr. H. G. Barber exhibited some live specimens of a new *Barce* which had been given to him by Professor E. B. Wilson, who had received them from Mr. Manee of Southern Pines, North Carolina.

The president appointed Messrs. G. W. Angell and Dr. Love as a committee to report on the possibility of the society's coöperation in publishing Mr. Henshaw's Bibliographical List of the Coleoptera of North America.

Society adjourned.

H. G. BARBER,
Secretary.